

U.S. Patent Application Serial No. 10/647,237
Amendment filed September 6, 2006
Reply to OA dated March 8, 2006

REMARKS

Claims 1 and 3-21 are pending in this application. Claims 3, 5, 6, 9, and 15 have been amended herein. Upon entry of this amendment, claims 1 and 3-21 will be pending. A minor amendment has also been made to the specification.

No new matter has been added by these amendments. Support for the amendments is discussed below. It is believed that this Amendment is fully responsive to the Office Action dated **March 8, 2006**.

The disclosure is objected to because of the following informalities: Page 6, line 1, note that “the” should be rephrased as --there are-- and “are” should --which define-- for clarity of description. (Office action p. 2)

The objection is overcome by the amendment to the disclosure as requested by the Examiner.

Claims 1 and 3-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (Office action p. 2)

Reconsideration of the rejection is respectfully requested.

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The Examiner states: "It should be noted that the '(001), (100) or (010)' are the only face orientations which are specifically defined by the original specification and no "other" face orientations appear to have been originally defined."

Applicant respectfully submits that the Examiner has misunderstood the notation of (001), (100) and (010) as being "face orientation." Applicant submits that the notations (001), (100) and (010) do not indicate orientation, but face.

Firstly, the notation of (001), (100) and (010) shows the crystal face (or crystal plane) in crystallography. (Example: usually, (001) is read as Plane of 001 or 001 plane, etc. Moreover, in order to be clear, (001) is written as (001) plane or plane of (001), too.)

Then, an MgO crystal is a Cubic crystal, and arrangements of Mg atom and O atom are the same in every face of the MgO crystal.

As a result, (001), (100) and (010) have the same physical character and the same chemical character. In this sense, (001), (100) and (010) are all identical. Of course, as a substance treatment, in order to distinguish respectively, the face treated first is decided as (001), and the other faces are designated successively.

Applicant has attached a standard reference on crystallography to support this argument:

Charles Kittel, INTRODUCTION TO SOLID STATE PHYSICS, 8th Edition, Wiley, (ISBN: 0-471-41526-X), pp. 2-18.

Therefore, the recitation "and having other faces," added in the amendment of November 17, 2005, did not represent new matter.

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Claims 1 and 3-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office action p. 3)

The rejection is traversed in part and overcome in part by the amendments to the claims, as discussed below:

1) The Examiner states that claim 1, line 3, is unclear, stating:

“note that it is unclear if 'and having other faces' is the proper characterization of the invention. Note that 'other faces' would normally be construed to mean 'face' orientations other than '(001), (100) and (010)', which does not appear consistent with applicant's invention. Should surfaces have been used instead of 'face'?”

This portion of the rejection is respectfully traversed.

Applicant notes first of all the above remarks in response to the rejection under 35 U.S.C. 112, first paragraph, regarding the use of the word “face.” Applicant submits that the use of “face” in the present claims is correct, and notes that “face” must be distinguished from “orientation.”

“Surface” in the claims means the boundary of the MgO materials. It is possible, of course, that the surface of the material corresponds to a crystal face (or crystal plane), when a repeating pattern that Mg atom and O atom line up mutually is convenient mathematically on the arrangement of Mg atom and O atom in MgO crystal, at which time the boundary (the plane or the face) may be designated in terms of crystallography. Of course, it is possible that a desirable crystal face comes to the surface by cutting or polishing, etc.

In addition, in the MgO crystal, the distances between the Mg atom and the plural adjoining O atoms are equivalent; furthermore, the adjoining atoms are arranged perpendicularly to each other. Namely, when viewing MgO as the crystal (or crystal lattice), it is a cubic crystal. In the crystal, the number of O atom adjoining Mg atom is six atoms. On the surface of (001), (100) or (010), the number of O atom adjoining Mg atom is five atoms. This state is indicated by the following examples.

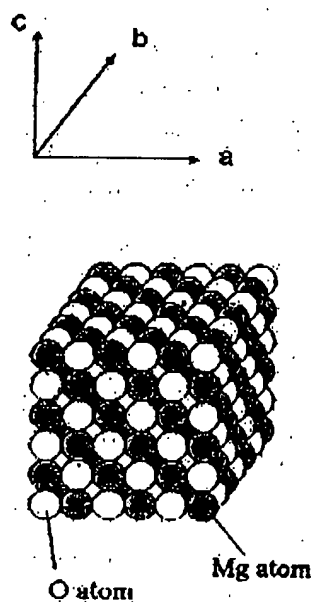


Fig. 1: Figure of MgO crystal

In Cubic crystal, if, in the a-axis orientation, distance between position of Mg atom and that of O atom is L_a , in the b-axis orientation, distance between position of Mg atom and that of O atom is L_b and, in the c-axis orientation, distance between position of Mg atom and that of O atom is L_c , then $L_a=L_b=L_c$ is true.

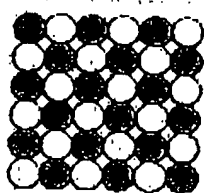
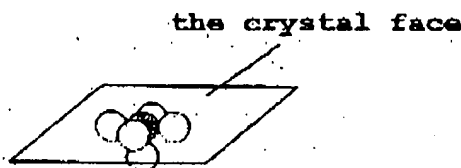


Fig. 2: Figure of the crystal face of (100), (010) and (001) in MgO

The atomic arrangement is the same in the crystal and on the face.



(a) In the crystal



(b) On the face of the crystal (100) face

Fig. 3: Oxygen atom adjoining Mg atom in the crystal

The atomic arrangement of the crystal face in Fig. 2 is the same as that of the face in Fig. 3(b).

Applicant therefore submits that the use of "surface" and "and having other faces" in claim 1 is proper. Reconsideration of this portion of the rejection is respectfully requested.

2) The Examiner states, in regard to claims 3 and 9, last lines, that the "m" parameters should be --p-- parameters. The Examiner is correct that these refer to the subscripts "p1", etc., in the formula $RE_{p1}Ba_{p2}Cu_{p3}O_{p4}$, and claims 3 and 9 have been amended accordingly.

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3) With regard to claims 5 and 6, the Examiner states that it is unclear what characterizes the "other members." The rejection is overcome by the amendments to claims 5 and 6, in which "members" is replaced by --parts that are the pedestal, the fixtures, and the other MgO blocks--. Applicant submits that it can be inferred from the specification that these parts are the "members" in the original claim. For example, bonding film 204, discussed in the specification on page 12, can be seen in Fig. 4 to bond the superconducting film 203 to pedestal 202, and bonding film 208 bonds MgO block 207 to MgO block 206 and the pedestal.

4) The Examiner also states that the last paragraph of claim 15 contains a redundant recitation to the last paragraph of claim 6. The rejection is overcome by the amendment to claim 15, deleting the last paragraph.

5) With regard to claims 3, 6, 9 and 15, the Examiner states that the recitation "any one kind or more" should be rephrased in Markush format. The rejection is overcome by the amendment to claims 3, 6 and 15. Applicant respectfully submits that claim 9 does not use the recitation "any one kind or more" and is already in Markush format, and claim 9 is not amended in this regard.

6) In claims 11 and 12, the Examiner states that "is made of" should be rewritten as --comprises--. The rejection of claims 11 and 12 is respectfully traversed. Applicant submits that the recitation "is made of brass" is definite and represents a proper limitation.

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Claims 1, 3-19, 20 and 21 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112, second paragraph.

Applicant has traversed the rejection under 35 U.S.C. 112, first paragraph, and Applicant respectfully submits that the claim amendments overcome the rejection under 35 U.S.C. 112, second paragraph.

In view of the aforementioned amendments and accompanying remarks, the claims, as amended, are in condition for allowance, which action, at an early date, is requested. Reconsideration of the rejections and objections is respectfully requested.

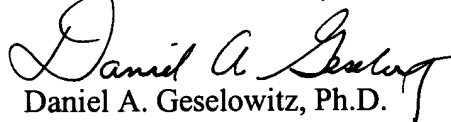
If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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In the event that this paper is not timely filed, the Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP


Daniel A. Geselowitz, Ph.D.
Agent for Applicant
Reg. No. 42,573

DAG/bh
Atty. Docket No. **031031**
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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PATENT TRADEMARK OFFICE

Enclosures: Charles Kittel, INTRODUCTION TO SOLID STATE PHYSICS, 8th Edition, Wiley,
(ISBN: 0-471-41526-X), pp. 2-18.

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